IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
RICHMOND DIVISION

SAMSUNG ELECTRONICS CO., LTD. and SAMSUNG ELECTRONICS AMERICA, INC., Plaintiffs, -v.- NVIDIA CORPORATION, VELOCITY MICRO, INC. D/B/A VELOCITY MICRO, AND VELOCITY HOLDINGS, LLC, Defendants.	Civil Action No. 3:14-cv-757-REP

DEFENDANTS' OPENING CLAIM CONSTRUCTION BRIEF

TABLE OF CONTENTS

TABLE OF AUTHORITIES

Cases

Statutes

ASSERTED CLAIMS

Patent	Asserted Claims
U.S. Patent No. 8,252,675	12, 13, 14 (3 claims)
U.S. Patent No. 6,287,902	1, 3, 4, 5, 6, 7, 9, 10, 15, 16 (10 claims)
U.S. Patent No. 5,860,158	1, 15, 17, 18, 21, 22 (6 claims)
U.S. Patent No. 6,819,602	1, 3, 26, 27, 28, 29 (6 claims)
U.S. Patent No. 6,262,938	17, 18, 19, 20, 21, 23, 24 (7 claims)
U.S. Patent No. 6,804,724	6, 7, 8 (3 claims)
U.S. Patent No. 7,073,054	1, 3, 6, 7, 8 (5 claims)
U.S. Patent No. 5,777,854	1, 3, 4, 6, 15, 16, 17, 19 (8 claims)

EXHIBITS

A1	'675 FH, Feb. 28, 2012 Applicant Remarks
B1	'902 FH, 12/5/2000 Office Action
B2	'902 FH, 3/5/2001 Amendment
B3	'902 FH, 5/2/2001 Reasons for Allowance
B4	U.S. Patent No. 5,365,111
B5	U.S. Patent No. 5,436,188
B6	American Heritage College Dictionary (3d ed. 1993)
B7	American Heritage College Dictionary (3d ed. 1993)
B8	Collins English Dictionary (3d ed. 1994)
B9	Webster's II New College Dictionary (1999)
B10	Random House Unabridged Dictionary (2d ed. 1993)
C1	'158 FH, 6/2/1998 Applicant Remarks
D1	IEEE 100 The Authoritative Dictionary of IEEE Standards Terms (7th ed. 2000)
D2	McGraw-Hill Dictionary of Scientific and Technical Terms (6th ed. 2002)
D3	Wiley Electrical and Electronics Engineering Dictionary (2004)
D4	Brendan Whelen, "How to Choose a Voltage Reference," Linear Tech. Magazine (2009)
D5	U.S. Patent No. 6,414,517
D6	U.S. Patent No. 6,512,704
D7	U.S. Patent Appl. Pub. 2003/0090294
E1	'938 FH, 1/16/2001 Response to Office Action
E2	American Heritage Dictionary (3d ed. 1992)
E3	Webster's New World College Dictionary (4th ed. 1999)
E4	Webster's II New College Dictionary (1995)
E5	Random House Webster's College Dictionary (1995)

E6 IEEE 100 The Authoritative Dictionary of IEEE Standards Terms (7th ed. 2000)

E7 Sajjan G. Shiva, Introduction to Logic Design (2d ed. 1998)

E8 Microsoft Press Computer Dictionary (3d ed. 1997)

F1 The IEEE Standard Dictionary of Electrical and Electronics Terms (6th ed.)

F2 VESA Plug and Display Standard (1997)

F3 Kim et al., Interface Issues in Displaying Graphics and Video on High Resolution Flat Panel Displays (1997)

F4 Samsung's '724 Patent Infringement Contentions

G1 '854 FH, 10/15/1996 Response to Office Action

Defendants' constructions properly reflect the well-known meaning of the disputed terms in the context of the patents and, where appropriate, the express disclaimers made by Samsung during prosecution to obtain allowance of its patents. In contrast, Samsung's constructions ignore the well-known meanings of the terms, and attempt to recapture the very subject matter Samsung disclaimed to overcome prior art. Defendants' constructions should be adopted.

I. OVERVIEW OF THE ASSERTED PATENTS

Samsung asserts eight patents in this litigation, involving a variety of different technologies. Defendants anticipate that by the time of the claim construction hearing, only six patents will be at issue.[1] In the meantime, the parties have agreed to construe terms from seven of the patents. Two patents—U.S. Patent Nos. 8,252,675 and 6,287,902—relate to semiconductor manufacturing. Three patents—U.S. Patent Nos. 5,860,158, 6,819,602, 6,262,938—relate to cache and SDRAM (parts of a memory system). The remaining two patents—U.S. Patent Nos. 6,804,724 and 5,777,854—relate to connecting a laptop to an external monitor and a computer chassis (computer case), respectively.

II. LEGAL PRINCIPLES

"Claim terms are generally given their plain and ordinary meanings to one of skill in the art when read in the context of the specification and prosecution history." *Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1371 (Fed. Cir. 2014). "There are only two exceptions to this general rule: 1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution." *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012). It is well-settled that "in construing a claim [the court] is to 'exclude any interpretation

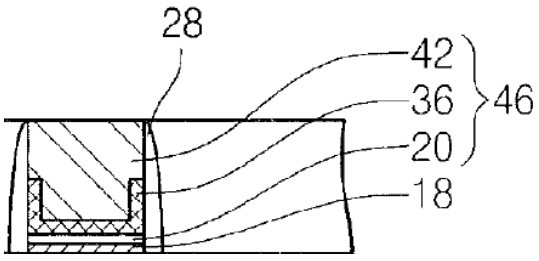
[1] At the June 3, 2015 hearing, Defendants reiterated the *de minimis* damages associated with U.S. Patent Nos. 5,777,854 and 7,073,054. Samsung has now agreed to drop those patents and the parties are working on mutually agreeable language for a stipulation to that effect.

that was disclaimed during prosecution.'" *Philips v. AWH Corp.*, 415 F.3d 1303, 1317 (Fed. Cir. 2005) (citation omitted).

III. ARGUMENT

A. '675 Patent – U-Shaped Metal Gate Patent

The '675 patent is directed toward a specific way of forming the metal layers of a gate electrode of a transistor, a common circuit used in microchips. The '675 patent teaches and claims using a ***single*** "conformal" (*i.e.*, "U-shaped") metal layer when forming the gate electrode. Figure 17 (excerpted below) illustrates the allegedly novel gate electrode (46). It has three metal layers (20, 36, and 42). Layer 36 is a single conformal, or "U-shaped," layer that conforms to the contour of the space defined by the spacers (28) and bottom surface (20) onto which 36 is applied.



During prosecution, the Patent Office rejected the claims of the '675 patent because a prior art patent by Lim disclosed using multiple conformal, or "U-shaped," metal layers to form a gate electrode. In response, and to get the '675 patent allowed, Samsung amended its claims to distinguish Lim, expressly stating that unlike its alleged invention, Lim "illustrates conformal deposition of ***multiple*** metal layers . . . to define composite metal gate electrodes." Ex. A1 at 7-8. Samsung then explained that depositing multiple conformal layers was a problem with the prior art because it can cause "void formation," and that Samsung's single conformal deposition avoids that problem. Specifically, Samsung stated:

> Lim et al. ***merely illustrates conformal deposition of multiple metal layers*** in sequence into pre-formed recesses in order ***to define composite metal gate electrodes***. But this method of Lim et al. is ***prone to void formation*** when used to fabricate relatively narrow gate electrodes associated with highly integrated transistors. This void formation may result from a premature closure of the recess ***during each conformal metal deposition step***.

Id.[2] After Samsung made this disclaimer and amended the claims, the '675 patent issued.

As set forth below, this disclaimer applies squarely to the first disputed term concerning deposition of the "second" metal gate electrode layer. That layer must be restricted to a single conformal, or "U-shaped," metal layer, and cannot include the "***multiple metal layers***" that Samsung expressly disclaimed. Samsung's construction, which permits the deposition of ***multiple*** conformal layers, improperly seeks to recapture precisely what Samsung disclaimed during prosecution.

1. '675 Patent: "depositing a second metal gate electrode layer onto inner sidewalls of the spacers and onto an upper surface of the patterned first metal gate electrode layer" (all asserted claims)

Defendants' Proposed Construction	Samsung's Proposed Construction
"applying, using conformal (*i.e.*, U-shaped) deposition, one metal gate electrode layer to the inner sidewalls of the spacers and to the upper surface of the patterned first metal gate electrode layer"	"creating a structure comprising one or more metal sublayers each formed by a deposition process onto inner sidewalls of the spacers and onto an upper surface of the patterned first metal gate electrode layer"

This term appears in independent claim 6 from which asserted claims 12-14 depend. The term describes the deposition of the second metal gate electrode layer. The last clause of claim 6 (12:9-10) expressly states that the second layer is the conformal U-shaped layer: "the second metal gate electrode layer ***having a U-shaped cross-section***." In view of the prosecution history disclaimer that disallows use of "multiple" conformal layers, the claimed second layer is restricted to one—and only one—conformal layer. *Springs Window Fashions LP v. Novo Indus.,*

[2] Emphasis added throughout unless otherwise indicated.

L.P., 323 F.3d 989, 996 (Fed. Cir. 2003) ("Because the patentee explicitly stated during prosecution that his claims differed from a single plate with multiple cutting edges, we construe the disputed claims to exclude the disclaimed single plate device."); *see also TomTom, Inc. v. AOT Sys., GmbH*, 17 F. Supp. 3d 545, 549 (E.D. Va. 2014) (holding that "an applicant who argues during prosecution that a claim possesses a feature that the prior art does not possess in order to overcome a prior art rejection ***is bound by that representation***.") (citation and quotation marks omitted).

Other claim language confirms that the second metal layer is restricted to a ***single*** layer. Specifically, the asserted claims expressly require that the second metal gate electrode layer be "deposited . . . onto" the inner sidewalls of the spacers and the upper surface of the patterned first metal gate electrode layer. Only one layer can be "deposited onto" these surfaces because once a layer is deposited "onto" these surfaces, any additional layer(s) would necessarily have to be deposited onto ***that*** layer. The additional layer(s) could ***not*** be deposited onto the surfaces of the spacers and patterned first metal gate electrode layer.

The specification also supports the conclusion that the second metal gate electrode layer is just one conformal layer. First, it always describes the claimed second metal gate electrode layer[3] as a single conformal "U-shaped" layer. *See, e.g.*, '675 patent at 5:5-8 (describing layer 36 as "***a*** titanium nitride ***layer***"), 5:42-44 ("the first metal layer 36 may be remained [sic] in the first trench 35 to form a first metal pattern with a 'U' shaped section"), Figs. 11-17 (showing layer 36 as a single conformal layer). It never mentions using multiple conformal layers. Second, the specification explains that conformal depositions into spaces for gate electrodes (referred to as trenches in the specification) may cause a "void," which can negatively affect

[3] The '675 specification sometimes refers to the "second metal gate electrode layer" of asserted claim 6 as the "first metal layer," depending on context, such as at 5:11-14.

operation of the gate. '675 patent at 5:11-14, 6:36-38. This "void" problem is the exact same problem Samsung told the Patent Office was caused by Lim's multiple conformal depositions. Ex. A1 at 7-8 ("But [the multiple conformal deposition] method of Lim et al. is ***prone to void formation***."). Accordingly, the specification supports Samsung's clear and unmistakable statement during prosecution that its invention does not cover multiple conformal depositions.

Separately, there are at least three reasons why Samsung's proposed construction cannot be correct. First, it contradicts the prosecution history by allowing for multiple conformal metal layers. Second, it is unsupported and confusing because it uses the term "sublayer" which never appears in the patent. Third, it reads the words "deposited onto" out of the claims by allowing for the deposition of "one or more metal sublayers." Indeed, Samsung's proposal leads to an impossible result. According to Samsung, sublayers deposited upon one another can nevertheless be said to be "deposited onto" the inner sidewalls of the spacers and the upper surface of the patterned first metal gate electrode layer. That is wrong and not how the English language works.

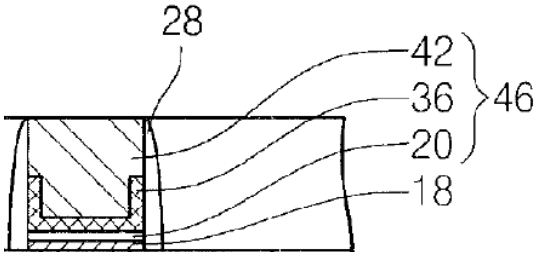
2. '675 Patent: "depositing a third metal gate electrode layer onto the second metal gate electrode layer" (all asserted claims)

Defendants' Proposed Construction	Samsung's Proposed Construction
"applying, without using conformal deposition, a metal gate electrode layer to the one conformal metal gate electrode layer"	"creating a structure comprising one or more metal sublayers each formed by a deposition process onto the second metal gate electrode layer"

This term appears in independent claim 6. It is directed to the deposition of a third metal gate electrode layer onto the second conformal "U-shaped" metal gate electrode layer. This third layer ***cannot*** be a conformal layer because, as discussed above, Samsung disclaimed depositing multiple conformal layers to "define composite metal gate electrodes." Ex. A1 at 7-8. Samsung's proposed construction, once again, improperly permits multiple conformal layers.

As before, the claims and the specification support Defendants' construction: the third metal gate electrode layer cannot be a conformal layer. The claim language requires that the third metal gate electrode layer "fill a space between the inner sidewalls of the spacers," in contrast with the conformal "U-shaped" deposition of the second metal gate electrode layer. '675 patent at 11:58-12:3. Indeed, the limitation "filling a space between the inner sidewalls of the spacers" was added during prosecution at the same time that Samsung disparaged multiple conformal depositions. Ex. A1 at 3, 5. In other words, Samsung made plain that the deposition of the third metal gate electrode layer fills the space between the sidewall spacers and is ***not*** an additional conformal deposition.

Next, the specification always shows the third metal gate electrode layer as a non-conformal layer that is deposited onto the conformal "U-shaped" layer. *See, e.g.*, '675 patent at 5:64-66, Figs. 16-17 (showing layer 42 as a non-conformal layer). It never describes the third metal layer as conformal. The third metal gate electrode layer is illustrated below in an excerpt of Figure 17 where, consistent with the claim language and every description in the specification, the third metal gate electrode layer (42) is deposited onto the conformal "U-shaped" layer (36) to fill the remaining space between the spacers (28).



Samsung's proposed construction is flawed because it ignores Samsung's own statements to the Patent Office in the prosecution history, and improperly allows for multiple conformal layers. Once again, Samsung erroneously asks the Court to adopt the ambiguous term "sublayers," ignoring that the third metal layer must be "deposited onto" the second conformal

layer. And, as discussed above, Samsung's proposed construction allows for the impossible (and nonsensical) result that every sublayer deposited onto another sublayer is nevertheless "deposited onto" the second metal gate electrode layer.

3. '675 Patent: "a gate insulating layer" (all asserted claims)

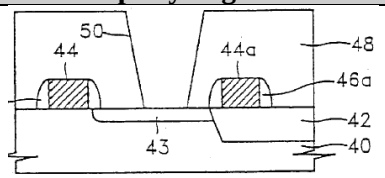
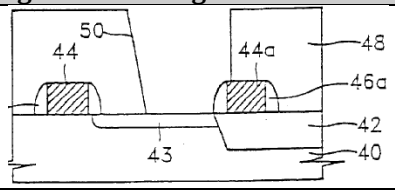
Defendants' Proposed Construction	Samsung's Proposed Construction
plain meaning	"a structure comprising one or more dielectric sublayers"

The parties dispute whether any construction of this term is necessary. Defendants maintain that the term "gate insulating layer" can be readily understood by a jury without any construction. In contrast, Samsung attempts to import limitations and needlessly complicate this simple term. According to Samsung, the Court should substitute for the single word "layer" the following prolix, seven-word definition: "a structure comprising one or more . . . sublayers." And in place of the ordinary word "insulating" that jurors can readily understand, Samsung proposes an undefined technical term, "dielectric," that most jurors have never heard of. In short, Samsung's proposal confuses (presumably by design, for validity purposes), rather than clarifies, the term at issue. It also completely ignores the word "gate" that appears in the term.

Moreover, Samsung's proposal is made out of whole cloth. Nowhere did the patentee act as a lexicographer to define this term, much less define the term in any pre-litigation context in the manner now proposed by Samsung. At best, Samsung's proposal seems to be based, at least in part, on a portion of a permissive embodiment disclosed in the specification. Specifically, the specification states that the "gate insulating layer 18 ***may be*** formed of a high-k dielectric layer." '675 patent at 3:30-32, 7:3-5. But neither the specification nor other intrinsic evidence ever states that the insulating layer ***must*** be a dielectric, to the exclusion of any other type of insulating layer. The Court should reject Samsung's attempt to rewrite the claim.

B. '902 Patent – Etch Inhibiting Layer Patent

The '902 patent, titled "Methods of Forming ***Etch Inhibiting Structures*** on Field Isolation Regions," purports to provide a solution for preventing damage to the "field isolation region" of a transistor if a contact hole (a hole used to make electrical connections) is misaligned during manufacturing. Figure 7 (below left) illustrates a properly aligned contact hole (50), which only exposes the "active region" (43) of a transistor. Figure 8 (below right) illustrates the claimed invention, which uses a dummy transistor, comprised of a metal layer (44a) and special spacers (46a) on both sides of the metal layer, to prevent damage to the field isolation region (42) during etching of the contact hole if the contact hole is misaligned.

Figure 7: Properly aligned contact hole	**Figure 8: Misaligned contact hole**
	

During prosecution, Samsung made significant concessions to obtain the '902 patent. Specifically, during prosecution, the examiner rejected the claims in view of the Michihiro patent, and explicitly stated that using insulating spacers along a sidewall was obvious:

> [It] would have been obvious to modify the device structure of Michihiro by forming the insulating spacers along a sidewall of the first and second patterned layers, because ***as is well known***, the insulating sidewall spacers would protect and prevent the first patterned conductive layer (gate electrode) and the second patterned conductive layer from ***contacting with the other adjacent elements***.

Ex. B1 at 5-6.

In response, Samsung represented to the Patent Office that the spacers in the '902 patent were not just well-known insulating spacers, but rather that the '902 spacers were special because they "***prevent damage to the field oxide layer in the event the contact hole is misaligned***." Ex. B2 at 8-9. Samsung's representation was relied on by the examiner to allow

the '902 patent to issue. In his Reasons for Allowance, the examiner explained that he was holding Samsung to its word, and allowing the patent to issue because, according to Samsung, the prior art did not disclose "***spacers that will prevent damage to the field oxide layer in the event the contact hole is misaligned***." Ex. B3 at 2. Samsung never disputed the examiner's Reasons for Allowance.

1. '902 Patent: "insulating spacer along a sidewall of the [second] patterned conductive layer" (all asserted claims)

Defendants' Proposed Construction	Samsung's Proposed Construction
"an insulating spacer, along a sidewall of the [second] patterned conductive layer, that prevents etch damage to the field isolation layer if the contact hole is misaligned"	"an insulating sidewall spacer adjacent to the [second] patterned conductive layer"

There are three primary disputes about this term. First, Defendants maintain that the claimed insulating spacer must prevent etch damage to the field isolation layer if the contact hole is misaligned, just as Samsung stated during prosecution. In contrast, Samsung runs from the prosecution history. Second, Defendants maintain that Samsung is improperly rewriting the phrase "along a sidewall of the second patterned conductive layer" to mean "adjacent to the second patterned conductive layer." And third, Defendants maintain that Samsung is improperly attempting to rewrite the claim so that the word "sidewall" is converted from a noun (which identifies the location of the spacer) to an adjective (which merely modifies the word "spacer," *i.e.*, a "sidewall spacer," without identifying any location).

a. Defendants' construction properly reflects Samsung's disclaimers.

Defendants' construction, which requires that the insulating spacers "prevent[] etch damage to the field isolation layer if the contact hole is misaligned," adopts essentially verbatim Samsung's representations to the Patent Office during prosecution and the examiner's Reasons

for Allowance. This is consistent with black-letter claim construction law: "an applicant who argues during prosecution that a claim possesses a feature that the prior art does not possess in order to overcome a prior art rejection ***is bound by that representation***." *TomTom, Inc.*, 17 F. Supp. 3d at 549 (citation and quotation marks omitted).

Samsung's proposal must be rejected because it ignores the express disclaimers Samsung made to the Patent Office during prosecution. It is well-settled that an argument "that would erase from the prosecution history the inventor's disavowal of a particular aspect of a claim term's meaning" is "inimical to the public notice function provided by the prosecution history." *Hockerson-Halberstadt, Inc. v. Avia Grp. Int'l, Inc.*, 222 F.3d 951, 957 (Fed. Cir. 2000). Samsung's proposal would recapture spacers that ***do not*** prevent etch damage to the field isolation layer if the contact hole is misaligned, which is the exact opposite of what it told the Patent Office to obtain allowance of the '902 patent. It also is the opposite of what Samsung said in the patent specification itself, where Samsung unequivocally stated that "spacers protect the field isolation layer from the etch used to form the contact hole." '902 patent at 6:9-13.

Samsung's proposed construction omits a key aspect of the invention and ignores the applicant's disclaimer. For this reason alone, it must be rejected.

b. Samsung's construction improperly rewrites claim language.

The parties further dispute whether, as Samsung proposes, (i) the phrase "along a sidewall of" should be replaced by the words "adjacent to," and (ii) the word "spacer" should be rewritten as "sidewall spacer." There is no support for these changes.

The term "along a sidewall of" is unambiguous and does not need to be construed. The plain and unambiguous meaning is illustrated by Figure 6, and its description:

> A nitride layer can then be formed over the surface of the patterned conductive layers . . . . This nitride film can be isotropically etched to form the nitride spacers

> 46 and 46a ***along the sidewalls*** of the first and second patterned conductive layers 44 and 44a.

'902 patent at 5:26-31; *see also id.* at 1:50-55, 4:19-23. There is nothing in the specification which suggests, much less requires, that "along a sidewall of" be redefined as "adjacent to." And common dictionary definitions confirm that "adjacent" does not mean "along." "Adjacent" is defined as "being near or close, esp. having a common boundary; contiguous." Ex. B6 at 16. In contrast, "along" is defined as "over or for the length of." *Id.* at 38. For these reasons alone, Samsung's proposal should be rejected. But there is more.

The claim language specifies the location of the spacer, requiring that it be "along a sidewall of the patterned conductive layer." In this claim term, "sidewall" is used as a noun. It refers to the wall at the side of the patterned conductive layer, which is the location along which the insulating layer is formed. Samsung's proposal, however, eliminates this structural requirement by rechristening "sidewall" as an adjective that modifies "spacer." Apart from its apparent desire to do so, there is no basis for this wholesale rewriting of the claim term. For this reason as well, Samsung's proposal should be rejected.

Last, Samsung attempts to rely on prior art cited in the prosecution history. But these references undercut its position. *See, e.g.*, Ex. B4 at 2:52-53 ("spacer is formed on the sides of the gate electrode"); Ex. B5 at 3:10-11 ("spacers are formed on the gate structure").

In contrast to Samsung's proposal, Defendants' construction is based on Samsung's repeated statements in the intrinsic evidence. This Court should adopt Defendants' proposal.

2. '902 Patent: "an insulating layer" (all asserted claims)

Defendants' Proposed Construction	**Samsung's Proposed Construction**
plain meaning	"a structure comprising one or more electrically insulating sublayers"

As with the term "gate insulating layer" for the '675 patent, the parties dispute whether the term "insulating layer" needs construction. Defendants maintain that it does not. Samsung contends that not only should this term be construed, but that somehow (i) it should be construed significantly differently than the substantively identical term "gate insulating layer," and (ii) the nine words of its proposed construction (including the ambiguous "sublayer") provide clarity to the simple three-word term. Samsung provides no basis for its confusing construction of this three-word term. Nowhere in the specification or prosecution history did the patentee act as a lexicographer to define this term at all, much less in the manner proposed by Samsung.

For these reasons, Samsung's construction should be rejected.

3. '902 Patent: "forming a trench in said substrate, and wherein said field isolation layer fills said trench" (claim 6)

Defendants' Proposed Construction	Samsung's Proposed Construction
plain meaning	"etching a recess into said substrate and subsequently filling said recess with a field isolation layer"

Samsung's proposal seeks to redefine the readily-understood word "trench" as a "recess," a word that is foreign to the '902 patent, and that appears nowhere in its claims, specification, or prosecution history. The term "trench" has a plain meaning, as shown by the four dictionary definitions that Samsung has disclosed as extrinsic evidence for this term. Three of these definitions use the phrase "long, narrow," and all four definitions use the words "ditch" and "furrow." Ex. B7 at 379; Ex. B8 at 1640; Ex. B9 at 1175; Ex. B10 at 3. The term "recess" also has a plain meaning (shown by the same dictionaries), but the definitions for a recess are different from that for a trench, *i.e.*, a recess is an "indentation," "small hollow," "alcove," and "niche." Ex. B7 at 379; Ex. B8 at 1640; Ex. B9 at 1175.

The definitions of "recess" are broader, and encompass shapes that are not "trenches." The definitions of "trench" cited by Samsung all require a shape that is long in one dimension and comparatively narrow in the other dimension, as a ditch in the ground or the furrows on a brow. A circular hole dug into a surface will meet the definition of recess, but will not meet the definition of trench. In other words, while all trenches are recesses, not all recesses are trenches. Samsung's proposed term "recess" is broader than the claim term "trench." Accordingly, the court should not change the claim term "trench" to "recess."

Next, Samsung's proposal also improperly limits the "forming" step to require the use of etching. Neither the claims nor the specification require use of etching to form the trench. *See* '902 patent at 3:18-20, 4:16-19, 5:3-5. Likewise, Samsung's construction improperly requires that the filling of the "recess" occur "subsequently" to the etching. But again, the specification never states that the trench is filled with a separate "subsequent[]" step, and the claims require no such sequencing. *See* '902 patent at 3:18-20, 4:16-19, 5:3-5. There is no basis, in the intrinsic record or otherwise, for permitting Samsung to read these limitations into the claims.

C. '158 Patent – Cache Controller Patent

The '158 patent relates to techniques for controlling a computer cache memory. *See* '158 patent at 1:17-19. A cache is "a relatively small amount of fast memory" that temporarily stores information frequently used by the computer's processor. *Id.* at 1:23-24. The '158 patent describes a system that can "manage" "accesses to the cache by multiple devices." *Id.* at 2:9-12. The claimed system manages these multiple accesses, and potential out-of-order responses, by including a "cache control unit that includes transaction identification logic to identify cache accesses" using a request ID. *Id.*

Like a clerk who issues ticket numbers to customers in a fast food restaurant to keep track of the order in which the customers arrived and their food orders, the request IDs provided by the

cache control unit allow the system to keep track of which cache response (the food) corresponds with which request (the order).

1. '158 Patent: "request ID [value]" (all asserted claims)

Defendants' Proposed Construction	Samsung's Proposed Construction
"numerical value assigned by the cache controller"	"an identifier assigned to each cache request that distinguishes it from other cache requests"

The parties have two disputes: (i) are the request ID values assigned by the cache controller, as proposed by Defendants and required by the claim language, or are they assigned by the requesting device, as proposed by Samsung, and (ii) does a request ID value have to be assigned to ***each and every*** cache request, a limitation Samsung seeks to import from the specification?

a. The cache controller, not the requesting device, provides the request ID value.

The plain language of the claims mandates that the cache controller is what assigns the request ID value to a request. Each asserted claim recites four steps relevant to this limitation:

1) "receiving by a cache controller a first cache request from the device;"
2) "***providing by the cache controller*** ***a first request ID value*** corresponding to the first cache request to the device after receiving the first cache request;"
3) "receiving by the cache controller a second cache request from the device after receiving the first cache request;"
4) "***providing by the cache controller*** ***a second request ID value*** corresponding to the second cache request to the device after receiving the second cache request."

'158 patent at 37:4-16; *see also id.* at 39:58-40:3, 40:29-41. In the claimed method, ***the cache controller receives*** two cache requests from the device. After receiving each request, ***the cache controller provides*** a request ID value corresponding to each request. Thus, the claims expressly require that the cache controller, and not the device, provide the request ID value.

Samsung's proposal ignores this express requirement. It fails to specify that the ***cache controller must provide*** the ID value, and improperly permits something other than the cache controller (*e.g.*, the device) to provide the ID value. For example, under Samsung's proposal, the device (rather than the cache controller) can provide the ID value for the request before ever sending the request to the cache controller. This cannot be correct because the claim requires that the cache controller perform the step of providing. Furthermore, the claim specifies a sequence, stating that the step of providing the "request ID value" is performed by the cache controller "***after*** receiving the . . . request" from the device. This claimed sequence cannot be met if, as Samsung's erroneous proposal permits, the device provides the ID value for the request it sends to the cache controller.

The specification is entirely consistent with the claim language. It only describes the cache controller providing the request ID value. '158 patent at 2:8-36, 13:16-23, 13:39-56. Nothing else is said to perform this function. Indeed, the Summary of the Invention touts the advantages of "a ***cache control unit*** that includes transaction identification logic to identify cache accesses." *Id.* at 2:9-16. In other words, the very advantage of the alleged invention is that ***the cache controller*** has logic to provide a request ID value. Indeed, to overcome a prior art rejection during prosecution, the applicant amended the claims to add the requirement that the request ID value is provided "***by the cache controller***":

> 1. (Amended) A method for controlling a cache, the cache being coupled to a device, the method comprising:
>
> receiving by a cache controller a first cache request from the device;
>
> providing by the cache controller a first request ID value [for] corresponding to the first cache request to the device after receiving the first cache request;

Ex. C1 at 4.

As in the restaurant example, the ticket numbers are issued to customers *by the clerk*. Likewise, the intrinsic evidence makes plain that in the claimed system, the request ID values must be provided *by the cache controller*, as Defendants propose.

b. Samsung's construction improperly imports a limitation from the specification into the claims.

In an effort to avoid prior art identified by Defendants, Samsung seeks to artificially (and self-servingly) narrow the scope of certain claims by reading in from the specification an unclaimed requirement that a request ID value must be assigned to ***every*** cache request (and not merely to the claimed "first" and "second" cache requests). This is improper. Black letter law dictates that one cannot read into the claim limitations from embodiments in the specification, unless the specification includes a definition or there is a "clear and unmistakable disavowal." *See Hill-Rom Servs.*, 755 F.3d at 1371. No such definition or disavowal exists here.

The "each cache request" limitation Samsung seeks to import is not supported by the claim language. The claims do not address "each" cache request made. They expressly are limited to two cache requests, a "first" one and a "second" one, and to two corresponding request ID values, a "first" one and a "second" one. The specification is fully consistent, and lacks any teaching that each and every cache request must be provided an ID value. Nor is there any definitional language in the specification that imposes such a requirement. Samsung's proposal is unsupported by the intrinsic record and should be rejected.

D. '602 Patent – Dual-Use Buffer Patent

Both parties agree that the '602 patent describes a method of "***controlling propagation delay time***" in a data strobe buffer of a semiconductor memory. '602 patent at Abstract, 1:15–18 (Field of the Invention). The patent explains that in data strobe buffers capable of providing both single mode and dual mode data strobe signals, "propagation delay time from an input terminal

to an output terminal ***should be*** substantially the same in the single mode (SM) and in the dual mode (DM)." *Id.* at 1:62-2:1. But in practice, "the propagation delay time in the single mode is ***different*** from the propagation delay time in the dual mode." *Id.* at 2:1-4. Specifically, dual mode is faster than single mode, and this speed difference can cause problems when using memory. *Id.* at 2:12-14. To address this problem, the '602 patent proposes to ***delay*** the dual mode data strobe signal—*i.e.*, by controlling propagation delay time. *Id.* at Fig. 7, 8:55-65, 9:16-19.

1. '602 Patent: "controlling propagation delay time" (claims 26-29[4])

Defendants' Proposed Construction	Samsung's Proposed Construction
(Agreed) preamble of claim 26 is limiting	
"selectively delaying a signal as it passes through a circuit"	Plain and ordinary meaning

The term appears in the preamble of claim 26. Defendants have consistently maintained that (i) this preamble term is limiting, and (ii) should be construed as they propose. Through the tutorial, Samsung disagreed on both scores. But shortly after midnight today, Samsung (properly) conceded that the preamble of claim 26 ***is*** limiting, but has not (yet) conceded that Defendants' proposed construction is the right one. It is.

The Federal Circuit has held that "the preamble constitutes a limitation when the claims depend on it for ***antecedent basis***, ***or*** when it is ***essential*** to understand the limitations or terms in the claim body." *C.W. Zumbiel Co. v. Kappos*, 702 F.3d 1371, 1385 (Fed. Cir. 2012) (citation and quotation marks omitted). Here, the preamble of independent claim 26 is limiting because it provides the antecedent basis for "the semiconductor memory" recited in dependent claim 29.

The preamble also is limiting because it is essential for understanding the limitations of claim 26 and its dependent claims. More specifically, claim 26 recites "receiving" an inverse

[4] This term appears in claim 26, and claims 27-29 depend on claim 26.

data strobe signal, a reference voltage, and a data strobe signal, and "outputting" at least two data strobe signals. But without the preamble, there is nothing in the claim that performs the receiving and outputting. The preamble identifies the semiconductor memory as the structure that performs these steps. Similarly, dependent claim 28 recites a control signal that is "received from an ***external*** source." The relative term "external" is meaningless without the preamble, which makes clear that the control signal is from a source external to the semiconductor memory.

Samsung has now conceded that the preamble is limiting. The term at issue—"controlling propagation delay time"—is a technical term with which lay persons or a jury will not be familiar. Samsung's failure to offer a construction for it leaves the jury adrift in this technical jargon. Samsung—having belatedly conceded that the preamble is limiting—should not be permitted to evade disclosing the "plain meaning" that its experts will presumably rely on to show infringement. For example, without a construction from the Court, Samsung and its expert may (improperly) argue that the propagation delay time is controlled by a circuit that is external to the claimed semiconductor memory. However, the propagation delay occurs within, and therefore must be controlled within, the semiconductor memory.

In contrast to Samsung's approach, Defendants' construction "elaborat[es] [this] terse claim language in order to understand and explain . . . [to a jury] the scope of the claims." *Terlep v. Brinkmann Corp.*, 418 F.3d 1379, 1382 (Fed. Cir. 2005). Defendants' construction explains that one signal is delayed but another signal is not delayed. This is supported by the intrinsic evidence. Every embodiment that controls delay time does so by selectively delaying one of the signals as it passes through a circuit. *See, e.g.*, '602 patent at Figs. 7, 9, 11, 12. For example, Figure 9 shows a differential amplifier in which the data strobe signal has substantially the same propagation delay time in either single mode or dual mode. '602 patent at Figs. 1, 9;

6:42–43, 9:49–60. The '602 patent achieves this by using a delay circuit to selectively delay the dual mode signal. *See, e.g., id.* at Figs. 7, 11, 12.

Defendants' construction further is supported by the extrinsic evidence. "Propagation delay" is defined in technical dictionaries as "[t]he amount of time between when a signal is impressed on the input of a circuit and when it is received or detected at the output" (Ex. D1 at 879) and "[t]he time required for a signal to pass through a given complete operating circuit. . . ." (Ex. D2 at 1684). Both of these definitions are consistent with, and support, Defendants' proposed construction: selectively delaying a signal ***as it passes through a circuit***. That is, propagation delay occurs within a circuit—here, the semiconductor memory—and the propagation delay time therefore can only be controlled within that circuit.

2. '602 Patent: "reference voltage" (all asserted claims)

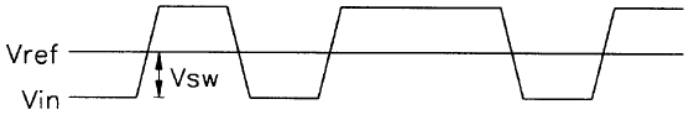
NVIDIA's Proposed Construction	**Samsung's Proposed Construction**
"constant, known voltage level for comparison"	plain and ordinary meaning

The term "reference voltage" is another technical term that will not be familiar to lay jurors (unless they are all engineers). Both sides agree that a reference voltage is properly represented in an electric circuit diagram as a straight, fixed, line of voltage used for comparison to a varying voltage signal. Consistent with that understanding and as reflected in Defendants' proposal, the meaning of "reference voltage" to a person of ordinary skill in the art at the time of the '602 patent was a "constant, known voltage level for comparison." For example, a contemporaneous electrical engineering dictionary defines "reference voltage" as a "voltage level whose steady value serves as a basis for comparison or operation." Ex. D3 at 646. Similarly, a technical journal article, titled "How to Choose a Voltage Reference," explains that "accuracy and ***stability*** are a voltage reference's most important features, as the main purpose of the reference is to provide a ***known*** output voltage. ***Variation*** from this known value is an

error." Ex. D4 at 1 (emphasis of "known" in original). Thus, "reference voltage" requires that the voltage level be both constant and known—like a straight line. Indeed, it makes little sense to use an unknown constant voltage for comparison. The result—that a signal is larger or smaller than some unknown fixed value—would be meaningless.

The cited references of the '602 patent—which are intrinsic evidence—confirm that a reference voltage is constant and known. Cited U.S. Patent No. 6,414,517 (which issued to Samsung and shares an inventor with the '602 patent) explains that "[a] typical input buffer circuit . . . compares an input signal Vin to a ***predetermined*** reference voltage Vref," confirming that a reference voltage is known. Ex. D5 at 1:21-23. Furthermore, Figure 2 of that patent shows a reference voltage (Vref) as a constant, flat line:

FIG. 2 (PRIOR ART)



Similarly, Figure 2 of cited U.S. Patent No. 6,512,704 and Figure 2 of cited U.S. Patent Appl. Pub. 2003/0090294 depict a reference voltage as a constant, flat line. Exs. D6, D7.

E. '938 Patent – Posted CAS Latency Patent

A memory controller accesses data in the memory banks of a SDRAM. It does so by first issuing a row access command (RAS), followed by a column access command (CAS). The memory controller issues these commands on a communication line connected to the SDRAM, known as a command bus. Once the SDRAM receives the RAS and applies it to the appropriate memory bank, that memory bank cannot apply a CAS until the row is ready or "activated." However, if the SDRAM does receive a CAS before the row is "activated," the SDRAM can

delay applying the CAS to that memory bank until the row has been "activated." The delayed application of the CAS is known as posted CAS. '938 patent at 1:49-51.

The '938 patent is directed towards "controlling CAS latency" (*i.e.*, "the number of clock cycles of the clock signal from the application of the column access command to the output of data") ('938 patent at Abstract, 4:50-51), and in particular, determining the delay used with posted CAS. When "the CAS command comes earlier than . . . RCLmin [the minimum time between RAS and CAS allowing the row to activate]" ('938 patent at 1:1-52), the SDRAM determines the delay of the posted CAS to be (1) RCLmin, minus (2) the time between RAS and CAS (*i.e.*, RCL). In other words, the SDRAM of the '938 patent determines the delay to be the remaining time needed to meet the RCLmin. This delay allows the CAS to be sent early so as to free the command bus.

1. '938 Patent: "determin[ed/ing]" (all asserted claims)

Defendants' Proposed Construction	Samsung's Proposed Construction
(Agreed) preambles of claims [8][5], 18, 21, 23, 24 are limiting	
"comput[ed/ing] by the SDRAM; preamble of claim 19 is limiting	plain and ordinary meaning; preamble of claim 19 is not limiting

Where a term has multiple meanings, the correct construction will be the one that "most naturally aligns with the patent's description of the invention." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998). Here, as used in the claims, specification, and file history, "determine[ed/ing]" means "comput[ed/ing] by the SDRAM"—consistent with its plain meaning in the circuitry context.

a. The preambles of the asserted claims are limiting.

The preambles (each reciting a SDRAM) are limiting under well-settled law. "[A] preamble limits the invention if it recites essential structure, or if it is 'necessary to give life,

[5] Asserted claim 17 depends from unasserted claim 8.

meaning, and vitality' to the claim." *Catalina Mktg. Int'l v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002) (citation omitted). Here, the preambles do both. The recited "[a] synchronous DRAM" is essential structure that gives life to the claims. Samsung conceded prior to filing its claim construction brief that the SDRAM recited in the preambles of claims 8, 18, 21, 23, and 24 is limiting, but still maintains that the preamble of claim 19 is not limiting.[6] There, however, is no basis for distinguishing claim 19 from the other claims. The preamble of claim 19 is also limiting.

To begin with, the title of the patent, the abstract, the claims, all the disclosed embodiments, and all the descriptions in the specification are harmonious. They all describe and disclose that SDRAM is the structure that performs the claimed functionality. For example, the patent is titled "***Synchronous DRAM*** having posted CAS latency and method for controlling CAS latency." Similarly, the Abstract states that method of the invention is to "perform a posted CAS latency operation and a general CAS latency operation ***by the SDRAM***." '938 patent at Abstract. The Summary of the Invention likewise states that "[i]t is an object of the present invention to provide a ***synchronous DRAM (SDRAM)*** by which it is possible to perform a posted column access strobe (CAS) command." *Id.* at 2:2-4. It also states that "[a]ccording to the SDRAM and the method for controlling the CAS latency ***of the present invention,*** a posted CAS latency operation . . . can be appropriately performed ***by the SDRAM***." *Id.* at 6:1-4.

And joining this unanimous chorus, all of the embodiments of the invention in the specification that show the posted CAS command describe it as being performed ***by the SDRAM***. For example in column 6, the specification states that Figure 4 illustrates "the

[6] Shortly after midnight on the due date of the opening briefs, Samsung conceded that the preambles for all the asserted claims are limiting except for claim 19 (and its dependent claim 20).

SDRAM in a posted CAS command mode." *Id.* at 6:21-22. And in column 9, the patent states that "Fig. 4 is a timing diagram of a posted CAS command in the main terminal of the ***SDRAM***"). *Id.* at 9:60-61.

The claims would make no sense if the preambles were not limiting. For example, the only structures recited after the preamble of claim 19 are the memory bank and the decoder. However, it is indisputable that these structures, alone, cannot "determine" the delay. *See, e.g.*, '938 patent at 3:10-12, 4:38-40, 4:58-60, 6:57-65 (describing the memory bank only as having a plurality of memory cells and decoder only for selecting the memory cells). Thus, the SDRAM recited in the preamble is essential because it is the only structure recited in the claim that can perform the "determining" limitation. Moreover, the very novelty of the alleged invention is to determine the delay of the posted CAS, to free the command bus, within the SDRAM. If the steps and limitations of the claims could be performed outside the SDRAM, additional commands would need to be sent on the command bus, negating the alleged utility of the patent of freeing the command bus.

Samsung contends that the preamble of claim 19 is not limiting. But claim 19 is no different, in this regard, from the other asserted claims of the '938 patent. For example, the preambles of claims 8 and 21 are identical to that of claim 19 except for the addition of "operating in synchronization with a clock signal." While "a clock signal" in the preambles of asserted claims other than claim 19 does provide antecedent basis, this is a distinction without meaning as a "*synchronous* DRAM" inherently operates "in synchronization with a clock signal."[7] Indeed, claim 19 repeatedly only refers to "*the* clock signal" without antecedent basis,

[7] *See, e.g.*, D.I. 81 (Second Am. Compl.) at ¶ 837 ("Synchronous DRAM (SDRAM) operates in synchronization with a clock signal.").

and it can only refer to a clock signal with which the claimed SDRAM operates in synchronization. Samsung's position is unsupportable in fact and in law.

b. Intrinsic and extrinsic evidence support Defendants' construction.

All asserted claims of the '938 patent are directed to an SDRAM that "determin[es]" a "number of [delay] clock cycles." '938 patent at claims 8, 18, 19, 21, 23, 24. As further described in these claims and the specification, the SDRAM determines this number by at least measuring RCL. *Id.* at 9:3-6. In fact, during prosecution, in discussing the "determining" limitation, Samsung argued that "nothing in [the prior art] discloses or suggests measuring RCL . . . much less comparing [its] value to generate . . . a first number of delay clock cycles." *See* Ex. E1 at 10. Samsung further clarified that the "first number of delay clock cycles is determined in response to information on ***the difference*** between RCL and [RCLmin].[8]" *Id.* at 4. Thus, the "determining" described in the claims, specification, and file history require that the SDRAM perform mathematical operations—in other words, computing by the SDRAM.

This use of "determining" is consistent with its plain meaning. In the context of computers, contemporaneous dictionaries equate "compute" with "determine." *See, e.g.*, Ex. E2 at 389 ("compute" "1. To determine by mathematics, especially by numerical methods . . . 2. To determine by the use of a computer."); Ex. E3 at 300 ("compute" "1. to determine (a number, amount, etc.) by arithmetic; calculate. 2. to determine or calculate by using a computer"); *see also* Ex. E4 at 231; Ex. E5 at 280. Consistent with the foregoing, other district courts have construed "determine" to mean "compute." *See Nuance Commun., Inc. v. Abbyy Software House, Inc.*, No. C 08-02912, 2011 WL 3816908, at *9 (N.D. Cal. Jun. 15, 2011).

[8] Samsung also clarified that "the difference between RCL and (RLmin – CLmin) corresponds to the difference between RCL and RCLmin." Ex. E1 at 3.

Samsung is hiding the ball (or behind it) by not having disclosed the plain meaning for which it advocates. Without this Court's construction, Samsung will create mischief. Samsung will improperly argue that the claims encompass an SDRAM that does not "determine" any delay at all, but instead, encompass an SDRAM that has a fixed delay built into it by the engineer who designed the SDRAM. Samsung will say that the engineer "determined" the delay. Clearly, this is impermissible. The plain meaning of these claims does not embrace design decisions made by engineers before an SDRAM is ever built. The claim says that the number of delay clock cycles must be "determined" based on values that can only be measured during operation of the SDRAM, which necessarily means that the SDRAM, not some design engineer, must make the determination.

2. '938 Patent: "shift register for delaying" (claim 17[9])

Defendants' Proposed Construction	Samsung's Proposed Construction
"register that moves its contents to the left or right for delaying"	"a circuit including a register for delaying"

Defendants' construction is consistent with the plain meaning of "shift register" and with the claims and specification. It is the correct construction. Samsung's construction, which reads out the word "shift" from the term "shift register," is wrong.

A "shift register" is a well-known structure in the computer arts. The authoritative IEEE dictionary defines "shift register" as "(1) A register in which the stored data can be moved to the right or left. (2) A register in which the data bits can be shifted in one direction or both." Ex. E6 at 1042. This definition is consistent with contemporaneous textbooks and dictionaries, including those relied on by Samsung. *See* Ex. E7 at 327 ("in the example above, the shift register shifts the data right at each shift pulse"); Ex. E8 at 433.

[9] This term appears in unasserted claim 8 from which asserted claim 17 depends.

The claims and specification of the '938 patent use the term "shift register" consistent with its plain and customary meaning. For example, Figure 1 discloses shift register 103 for delaying a column address (*i.e.*, CA). The specification explains that "[i]n operation, the column address CA is ***transmitted to the next register*** every clock cycle of the clock signal CLK." '938 patent at 7:45-47. In other words, the contents of the register "shift" in one direction—toward the next register.

Other district courts have similarly construed "shift register" consistently with its well-known meaning. For instance, in *Honeywell Int'l, Inc. v. Acer Am. Corp.*, the court construed shift register to mean "[a] register in which . . . the pattern of 0's and 1's in the register ***shifts*** to the right or left." No. CIV A 6:07CV125, 2009 WL 68896, at *5 (E.D. Tex. Jan. 7, 2009). Both parties in *Honeywell* acknowledged the construction as "a well known description of a 'shift register.'" *Id.*

Samsung's proposed construction ignores the norm. It eviscerates the word "shift" by proposing that a "shift register" is merely "a circuit including a register." No meaning or significance is given to the word "shift." Samsung ignores it, thereby impermissibly broadening the term's well-known meaning. Samsung's proposal should be rejected.

F. '724 Patent – External Display Patent

The '724 patent describes connecting an external analog or digital monitor to a laptop computer. '724 patent at Figs. 5-6. The patent addresses two purported problems in the prior art. First, it says that an "all digital" interface to connect a computer to a digital monitor (like a flat panel LCD monitor) was not known. *Id.* at 1:46-51. The '724 patent solves this purported problem by using a "well-known" digital video transmission format known as "Transition Minimized Differential Signaling," or "TMDS." *Id.* at 5:61-63.

Second, the '724 patent says that the prior art did not adequately handle a disconnected or powered-off external monitor. *Id.* at 1:52-55. This purported problem was solved with a "monitor cable sensing circuit," described in Figure 14. *Id.* at 4:1-2. The specification says this circuit allows the computer to detect when an external monitor has been disconnected from the computer, or powered-off, which permits the computer to enable transmission of video to the monitor only when it is connected and powered-on—thereby saving energy. *Id.* at 2:1-8.

1. '724 Patent: "sending parallel digital video data" (all asserted claims)

Defendants' Proposed Construction	Samsung's Proposed Construction
"simultaneously transmitting all bits of a given byte of the video data"	plain and ordinary meaning

The term "sending parallel digital video data" is a term of art with a well-known meaning in the computer field. It means simultaneously transmitting all bits[10] of a given byte of data. The parties appear to agree that transmitting data "*in parallel*" is the opposite of "*serial*" transmission, which means transmitting each bit of a given byte of data one at a time, one after another. Yet Samsung improperly attempts to conflate "parallel" with "serial" by asserting that transmitting multiple channels of serial data is the same as transmitting parallel data. It is not.

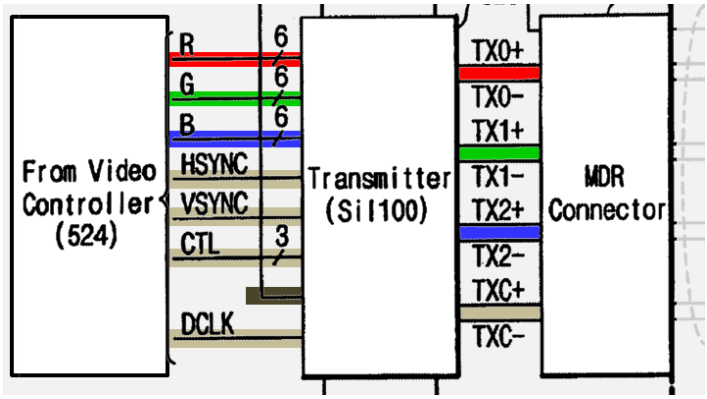
The claims support Defendants' construction, expressly distinguishing between sending "parallel" data and sending multiple channels of "serial" data. Claims 1 and 11 require sending "***serial***" analog video signals and "***parallel***" digital video signals. '724 patent at 11:9-10, 12:61-62. The use of both terms in a single claim creates a strong presumption that sending "serial" data is different from sending "parallel" data. *See Augme Techs., Inc. v. Yahoo! Inc.*, 755 F.3d 1326, 1333 (Fed. Cir. 2014) (construing term "embedded" computer code differently from

[10] In computer parlance, a bit is a single "1" or "0." Bits are the building blocks of a digital system. A "byte" is a group of bits that represents a unit of digital information. For example, "10010001" is a byte of information, containing 8 bits that represent decimal number 145.

"linked" computer code because "[d]ifferent claim terms are presumed to have different meanings" and rejecting patentee's proposed construction which "would render meaningless the distinction") (citation omitted).

The specification confirms the distinction between the terms "serial" and "parallel." In fact, the specification expressly states that sending multiple channels of serial data is ***not*** the same as sending parallel data. In particular, the specification teaches that "transmitter 526 ***receives parallel digital video data***" from the video controller 524. Transmitter 526 then "***encodes and serializes the parallel input data*** by the use of an internal PLL circuit. The ***serialized data is then transmitted*** to . . . the LCD monitor 600 ***over four low voltage differential channels***." '724 patent at 6:3-12. That is, the transmitter 526 receives "***parallel***" data, converts it to "***serialized*** data," and then transmits the "***serialized data***" to the LCD monitor over four channels. But even though transmitted over four channels, the patent identifies the transmitted data as ***serialized***, not parallel. Why? Because the bits on each channel are transmitted one at a time, one after another—in serial.

Fig. 14, included in part below, illustrates the process:



'724 patent at Fig. 14 (annotations added). The "parallel input data" is depicted by the three channels labeled "R," "G," and "B" in the upper left of the figure. Each of these channels transmits one of the color components used to define the color of the pixel on the computer

monitor and each channel is a group of six wires (denoted by "**/ 6**" in the figure). Each channel sends six bits ("1"s or "0"s), simultaneously to the transmitter. This is "parallel input data" because all six bits for each color are transmitted simultaneously.

After receiving this parallel data, the transmitter "encodes and serializes" the data. The serialized data is then transmitted, one bit after another, to the monitor over four channels. *Id.* at 6:8-14.

The authoritative IEEE dictionary defines "parallel transmission" in the same way as the '724 patent. IEEE explains that "parallel transmission" requires the "simultaneous" transmission of all the bits making up a character[11] or byte, and expressly contrasts "parallel transmission" with "serial transmission"—just like the '724 patent. Ex. F1 at 745 ("parallel transmission" "(1) (data transmission) Simultaneous transmission of the bits making up a character, either over separate channels or on different carrier frequencies on one channel. (2) In data communications, the simultaneous transmission of all the bits making up a character or byte where each bit travels on a different path. ***Contrast:* serial transmission.**").

Additional intrinsic and extrinsic evidence confirms that sending multiple channels of serial data is not sending parallel data. The Video Electronics Standards Association Plug and Display Standard ("VESA P&D"), a cited reference, describes a video display standard for use with a personal computer. Ex. F2. It explains that the video data transmission format used in both the '724 patent and VESA P&D, called "Transition Minimized Differential Signaling (TMDS)," converts "***parallel*** video data stream[s]" "to ***three*** high-speed ***serial*** differential data pairs." *Id.* at 34; '724 patent at 5:53-64. In other words, sending "three" "serial" "pairs," is different from sending "parallel" data. Likewise, a contemporaneous technical article explains

[11] A "character" in this context is a unit of digital data. It differs from a byte in that it is not necessarily 8 bits, but can be considered synonymous with a byte for the purposes of this brief.

how to "drastically reduc[e] the number of wires of the interconnect cable" when using the TMDS data format by undertaking a "parallel-to-serial conversion" before transmission and sending data over up to four "serial channels." Ex. F3 at 309.

Samsung contends this term should get Samsung's undisclosed plain and ordinary meaning. It is apparent, however, that this ruse is designed to facilitate mischief when Samsung experts present their opinions and/or when Samsung presents its infringement case. For example, according to Samsung's infringement contentions, the DisplayPort standard accused of infringement includes up to four "lanes" of serial data. Samsung contends that sending serial data over these four lanes constitutes "sending parallel digital video data." Ex. F4 at 13 ("Table 2–4 of the DisplayPort Standard, depicted in part above, shows that the data transmitted over four parallel video lanes comprises three parallel video signals: red, green, and blue."). But that is dead wrong and Samsung's contention is contradicted by the well-established meaning of parallel and serial, as set forth above.

Samsung should not be permitted to evade offering a plain meaning construction merely to avoid what appears to be a straightforward motion for summary judgment. But this case needs to be narrowed, and Samsung's silence on this claim term speaks volumes regarding its effort to avoid what should be an agreed claim construction, and delays simplification of this case.

2. '724 Patent: "means for generating . . . thereby informing . . ." (all asserted claims)

Defendants' Proposed Construction	**Samsung's Proposed Construction**
Term: "means for generating a cable sensing signal to be sent to said first external video port over the digital cable, thereby informing the video controller of the digital cable connection state of said first external port" Function: generating a cable sensing signal to be	Term: "means for generating a cable sensing signal to be sent to said first external video port over the digital cable, thereby informing the video controller of the digital cable connection state of said first external port" Function: generating a cable sensing signal

Defendants' Proposed Construction	Samsung's Proposed Construction
sent to said first external video port over the digital cable, thereby informing the video controller of the digital cable connection state of said first external port Structure: Monitor Cable Sensing Circuit 527 described in Fig. 14 and at 7:31-8:16, and equivalents.	Structure: DVCC and resistor R1 depicted in Figure 14

The parties agree this term is a means-plus-function[12] limitation. Thus, to construe: "First, the court must determine the claimed function. Second, the court must identify the corresponding structure in the written description of the patent that performs the function." *Noah Sys., Inc. v. Intuit Inc.*, 675 F.3d 1302, 1311 (Fed. Cir. 2012) (citation omitted).

The main dispute between the parties is whether the function associated with this term should be just a portion of the function recited in the claim, as proposed by Samsung, or the entire function recited in the claim, as proposed by Defendants and required by the law. The claim language is unequivocal that the function corresponding to this term is both "generating a cable sensing signal . . ." ***and*** ". . . informing the video controller of the digital cable connection state of said first external port"—the ***entire*** function recited in the claim. It is that entire function that the law requires be included in the construction. *See Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 296 F.3d 1106, 1114-15 (Fed. Cir. 2002) (construing function of term "means for monitoring the ECG signal . . . for activating said charging means in the presence of abnormal cardiac rhythm" to include both "monitoring the ECG signal" ***and*** "activating the charging means").

A means-plus-function term allows the patentee to recite a purely functional limitation in the claim, but in exchange, the term is limited to the corresponding structure in the specification

[12] Means-plus-function terms are governed by 35 U.S.C. § 112(6), which was re-numbered as 35 U.S.C. § 112(f) by the America Invents Act.

that performs the claimed function. *See Ibormeith IP, LLC v. Mercedes-Benz USA, LLC*, 732 F.3d 1376, 1379 (Fed. Cir. 2013). Each functional element in the claim must be tied to some structure—either a structure recited in the claim or a structure recited in the specification. Here, the "means" is the structure recited in the claims to both generate the signal ***and*** inform the video controller. Because there is no other structure recited in the claims to perform this combined function, the "means" should be construed to correspond with the entire function. *See MobileMedia Ideas LLC v. Apple Inc.*, 780 F.3d 1159, 1180 (Fed. Cir. 2015) (construing function of term "control means controls the state of said alert sound generator to reduce the volume of the sound" as "controlling the alert sound generator to change a volume of the generated alert sound"). This is consistent with the specification, which repeatedly and consistently describes together generating the signal and using the signal to inform the video controller of the connection state of the monitor. '724 patent at 2:11-30, 7:32-42, Fig. 14.

The corresponding structure of a "means-plus-function" limitation "must not only perform the claimed function, but the specification must clearly associate the structure with performance of the function." *JVW Enters., Inc. v. Interact Accessories, Inc.*, 424 F.3d 1324, 1332 (Fed. Cir. 2005) (citation and quotation marks omitted). Here, the function is "generating a cable sensing signal to be sent to said first external video port ***over the digital cable***, thereby informing the video controller of the ***digital cable connection state***." The '724 patent's specification describes Figure 14 as "a detailed diagram showing the LCD monitor cable sensing circuit." '724 patent at 4:1-2. This is the only figure linked by the specification to generating a cable sensing signal and informing the video controller of the connection state of the digital cable. Consequently, the corresponding structure for this term is Figure 14 and 7:31-8:16 (the associated description of Figure 14).

G. '854 Patent – Flexible Contacts Patent

In response to Defendants' suggestion at the tutorial that it do so, Samsung has now agreed to drop its assertion of U.S. Patent No. 5,777,854. The parties are working on mutually agreeable language for a stipulation to that effect. But the '854 patent remains in the case at the time of this filing. So Defendants present their arguments regarding the disputed claim terms.

1. '854 Patent: "contacts" (all asserted claims)

Defendants' Proposed Construction	Samsung's Proposed Construction
"protrusions from the base that contact the cover, and/or protrusions from the cover that contact the base"	Plain and ordinary meaning. Alternatively, "protrusion arm."

Each of the asserted claims of the '854 patent is directed at a chassis including a base and a cover, and a "plurality of flexible contacts" formed integrally within either the base or the cover. *See, e.g.*, '854 patent at claims 1, 6, 15, 16, and 19. The purpose of the contacts is to make physical contact with the other piece of the chassis, *i.e.*, the base or the cover, to allow proper grounding and to reduce any gaps between the base and cover that could allow electromagnetic interference (EMI) emissions to escape. *See id.* at 2:13-19, 5:46-58.

Consistent with the purpose of the contacts explicitly described in the specification, Defendants' proposed construction states that the "contacts" are protrusions that touch the opposing base or cover when the chassis is assembled. In contrast, Samsung turns its eyes from the express disclosures of its specification and the context of the invention and suggests, instead, that contacts should be given some undisclosed ordinary meaning.

But the intrinsic evidence of the '854 patent describes the claimed contacts as those protrusions that touch the opposing piece of the chassis when it is assembled. *See id.* at 5:46-50 ("By integrally forming flexible contacts 29 into the base 12 contact region 22, even if the base 12 and cover 14 do not sit flush in these contact regions, ***the flexible contacts 29 extend across***

the gaps to form a contact with the cover 14"); *see also* 5:55-58. Further, during prosecution, the patentee highlighted the contacts element to distinguish the prior art:

> In other words, flexibility is important in case certain contacts 29 protrude more than others. By flexing, all contacts 29 are capable of making contact with a corresponding contact point on the cover 14.

Ex. G1 at 6-7.

Recognizing that its undisclosed plain meaning approach is flawed, Samsung alternatively proposes to construe contacts as "protrusion arms." Samsung's proposed back-up construction is also flawed because it fails to require physical contact with the opposing base or cover, as taught by the intrinsic evidence. Under Samsung's alternative construction, any protrusion meets the "contacts" limitation regardless of whether it serves the purpose ascribed to contacts in the specification.

2. '854 Patent: "sufficient flexibility" (claims 1, 3, 4, 6, 15)

Defendants' Proposed Construction	Samsung's Proposed Construction
Indefinite	Plain and ordinary meaning. Not indefinite in context of "having sufficient flexibility to enable more than one contact to contact said other region."

The term "sufficient flexibility" in claims 1 and 15 of the '854 patent is indefinite because it is a term of degree and the '854 patent fails to provide any standard for measuring flexibility or any way to determine the degree of flexibility that is "sufficient." The flexibility of an object depends on a number of characteristics, including the material used, the object's thickness and length, and the force applied to the object. While "flexibility" is used throughout the '854 patent, the patent never defines the term or suggests how it should be measured. Even assuming that a skilled artisan would understand how to measure flexibility, the '854 patent provides no explanation of how to determine whether the flexibility of the claimed "contacts" is purportedly "sufficient."

Terms of degree, such as "sufficient," "must provide objective boundaries for those of skill in the art." *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014). Such terms are indefinite when they depend "on the unpredictable vagaries of any one person's opinion." *Id.* (quoting *Datamize, LLC. v. Plumtree Software, Inc.*, 417 F.3d 1342, 1350 (Fed. Cir. 2005)). Here, determining "sufficient flexibility" requires information about how to measure flexibility and how much flexibility is "sufficient," but the '854 patent provides no guidance on those issues.

The term is no less indefinite when considered in the context of "having sufficient flexibility to enable more than one contact to contact said other region" because whether more than one contact makes contact with the opposing base or cover does not necessarily depend on the flexibility of the contacts. In short, whether more than one accused flexible contact comes into contact with an opposing base or cover is not a measure of flexibility and, therefore, does not provide any objective boundaries to determine whether an accused contact is "sufficiently flexible." Consequently, the '854 patent fails to provide any disclosure that would inform one of ordinary skill in the art of a standard for measuring "sufficient flexibility" with reasonable certainty. As a result, the Court should find that the term is indefinite.

IV. CONCLUSION

Defendants respectfully request that the Court adopt their proposed constructions for each of the disputed claim terms.

NVIDIA CORPORATION
VELOCITY MICRO, INC.
D/B/A VELOCITY MICRO
VELOCITY HOLDINGS, LLC

By: /s/
Of Counsel

Dabney J. Carr, IV, VSB No. 28679
dabney.carr@troutmansanders.com
Robert A. Angle, VSB No. 37691
robert.angle@troutmansanders.com
Christopher J. Forstner, VSB No. 45375
chris.forstner@troutmansanders.com
TROUTMAN SANDERS LLP
1001 Haxall Point
Richmond, VA 23219
T: (804) 697-1200
F: (804) 697-1339

Maximilian A. Grant (admitted *pro hac vice*)
max.grant@lw.com
Matthew J. Moore (admitted *pro hac vice*)
matthew.moore@lw.com
Jessica E. Phillips (admitted *pro hac vice*)
jessica.phillips@lw.com
James R. Bender (admitted *pro hac vice*)
james.bender@lw.com
LATHAM & WATKINS LLP
555 Eleventh Street, N.W., Ste. 1000
Washington, DC 20004
Tel: (202) 637-2200; Fax: (202) 637-2201

Clement J. Naples (admitted pro hac vice)
clement.naples@lw.com
LATHAM & WATKINS LLP
885 Third Avenue
New York, NY 10022-4834
Tel: (212) 906-1200; Fax: (212) 751-4864

Ron E. Shulman (admitted pro hac vice)
ron.shulman@lw.com
Richard G. Frenkel (admitted pro hac vice)
rick.frenkel@lw.com
Lisa K. Nguyen (admitted pro hac vice)
lisa.nguyen@lw.com
Eugene Chiu (admitted pro hac vice)
eugene.chiu@lw.com
Ethan Y. Park (admitted pro hac vice)
ethan.park@lw.com
LATHAM & WATKINS LLP
140 Scott Drive
Menlo Park, CA 94025
Tel: (650) 328-4600; Fax: (650) 463-2600

Julie M. Holloway (admitted pro hac vice)
julie.holloway@lw.com
LATHAM & WATKINS LLP
505 Montgomery Street, Suite 2000
San Francisco, CA 94111
Tel: (415) 391-0600; Fax: (415) 395-8095

Ann Marie T. Wahls (admitted pro hac vice)
annmarie.wahls@lw.com
LATHAM & WATKINS LLP
330 North Wabash Avenue, Suite 2800
Chicago, Illinois 60611
Tel: (312) 876-7700; Fax: (312) 993-9767

Counsel for NVIDIA Corporation
Velocity Micro, Inc. d/b/a Velocity Micro
and Velocity Holdings, LLC

CERTIFICATE OF SERVICE

I hereby certify that on this 8th day of June, 2015, I will electronically file the foregoing with the Clerk of the Court using the CM/ECF system, which will then send a notification of such filing (NEF) to the following:

Robert W. McFarland
rmcfarland@mcguirewoods.com
McGuire Woods LLP
101 W. Main Street, Suite 9000
Norfolk, VA 23510

Sean F. Murphy
sfmurphy@mcguirewoods.com
McGuireWoods LLP
1750 Tysons Boulevard, Suite 1800
Tysons Corner, VA 22102-4215

Darin W. Snyder
dsnyder@omm.com
Alexander B. Parker
aparker@omm.com
Elysa Q. Wan
ewan@omm.com
O'Melveny & Myers LLP
Two Embarcadero Center, 28th Floor
San Francisco, CA 94111

Vision L. Winter
vwinter@omm.com
Ryan K. Yagura
ryagura@omm.com
O'Melveny & Myers LLP
400 South Hope Street, 18th Floor
Los Angeles, CA 90071

Mishima Alam
malam@omm.com
O'Melveny & Myers LLP
1625 Eye Street NW
Washington, DC 20006

Counsel for Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.

/s/

Dabney J. Carr, IV (VSB No. 28679)
dabney.carr@troutmansanders.com
Robert A. Angle (VSB No. 37691)
robert.angle@troutmansanders.com
TROUTMAN SANDERS LLP
1001 Haxall Point
Richmond, VA 23219
Telephone: (804) 697-1200
Facsimile: (804) 697-1339